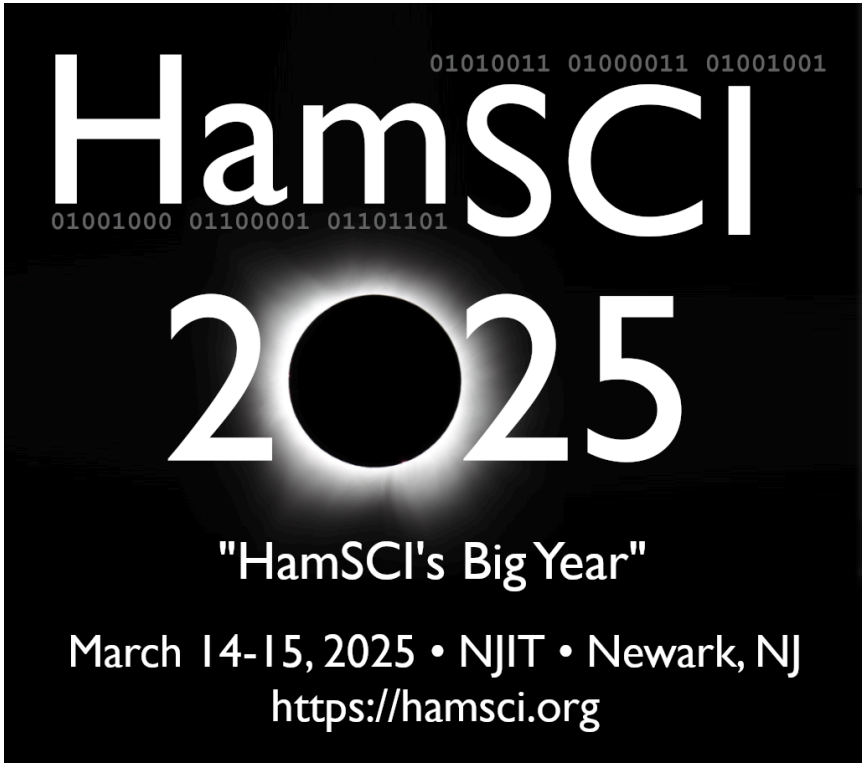

NSF

A R D C
AMATEUR RADIO DIGITAL COMMUNICATIONS

NASA Partner

nathaniel.frissell@scranton.edu

Thank You to Our Hosts, NJIT K2MFF!

- NJIT Department of Physics
- NJIT Center for Solar-Terrestrial Research
- NJIT Amateur Radio Club K2MFF

NJIT
New Jersey Institute of Technology

K2MFF president Grace Revoredo KE2CBY and vice-president Ethan Clarke AE2EC go over the HamSCI 2025 campus tour with the club members.

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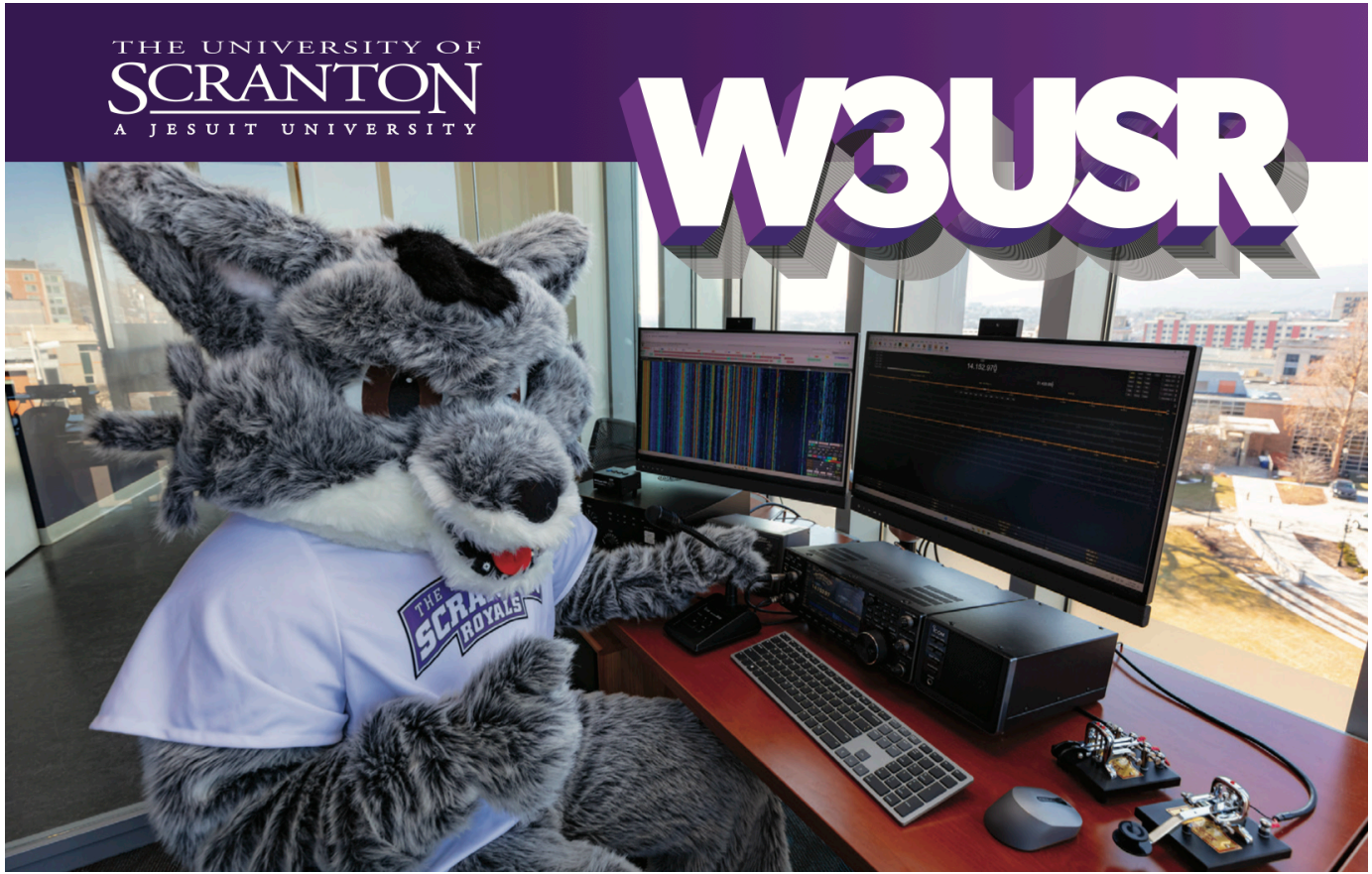


University of Scranton Department of Physics and Engineering

nathaniel.frissell@scranton.edu

We are hybrid!

- All talks are streamed over Zoom.
- If you have a question, put it in the chat, and the Zoom moderators can ask the question for you.
- You may also have a chance to ask the question using your own microphone.

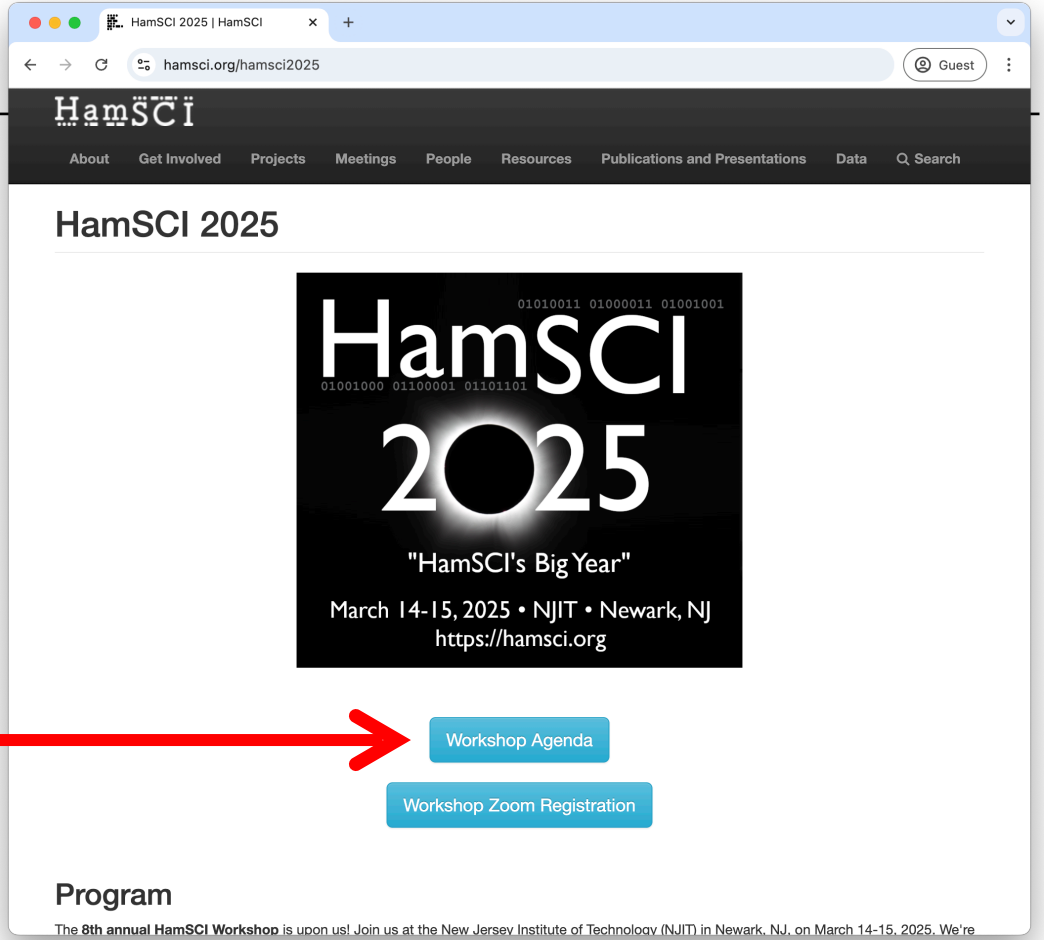
What is on Zoom?

- All Oral Sessions on Friday and Saturday
- The Keynote Presentation on Friday night 2330 UTC.

- *Poster session and workshops on Saturday afternoon are in-person only. You can see posters online.*

Agenda

https://hamsci.org/hamsci2025



HamSCI Invited Speakers 2025

Bob Inderbitzen
NQ1R

Dr. Lynn Harvey

Steve Cerwin
WA5FRF

Derek Kozel
K0ZEL

Dr. Lou Lanzerotti

Video Recording

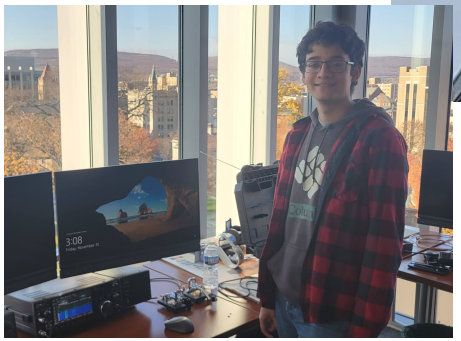
- Meeting is being recorded and will be post-processed by Jason Johnston KC5HWB of [Ham Radio 2.0]

What is Amateur (Ham) Radio?

- **Hobby for Radio Enthusiasts**
  - Communicators
  - Builders
  - Experimenters
- **Wide-reaching Demographic**
  - All ages & walks of life
  - Over 760,000 US hams; ~3 million Worldwide
- **Licensed by the Federal Government**
  - Basic RF Electrical Engineering Knowledge
  - Provides a path to learning
  - Licensing ensures a basic interest and knowledge level from each participant
  - Each ham has a government-issued “call sign”

University of Scranton Students KC3UAW and KD2UHN at W3USR

ARDC-Funded W3USR HF Antennas

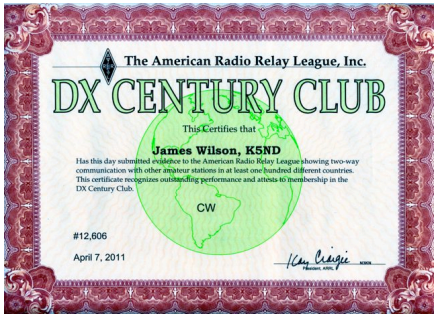


KD2ZHK @ the ARDC-Funded W3USR Scranton Station

nathaniel.frissell@scranton.edu

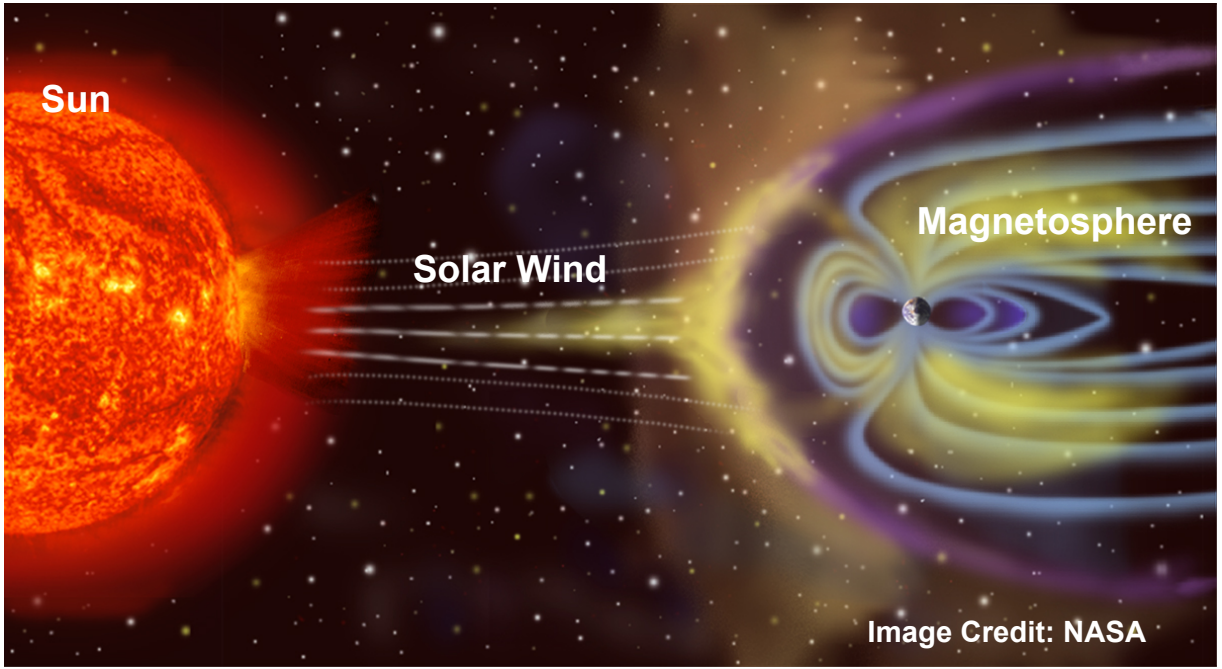
Examples of Ham Radio Communications

- **Emergency & Public Service**
- **Contesting / Radio Sport**
- **DXing / Distance Awards**

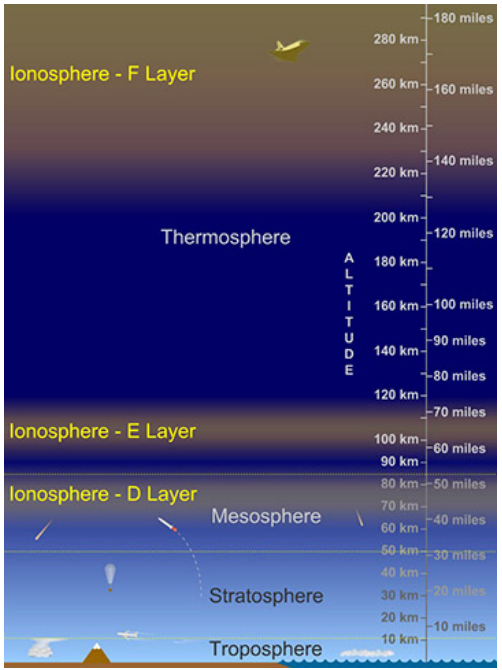

The American Radio Relay League, Inc.
DX CENTURY CLUB
This Certifies that
James Wilson, K5ND
Has this day submitted evidence to the American Radio Relay League showing two-way communication with other amateur stations in at least one hundred different countries. This certificate recognizes outstanding performance and attests to membership in the DX Century Club
CW
#12,606
April 7, 2011

What is Space Weather & Space Science?

Geospace System



Atmosphere



Credit: Randy Russell, UCAR
https://scied.ucar.edu/ionosphere

HamSCI Ham radio Science Citizen Investigation

HamSCI at 2023 Dayton Hamvention

Founder/Lead HamSCI Organizer:
Dr. Nathaniel A. Frissell, W2NAF
The University of Scranton

A collective that allows university researchers to collaborate with the amateur radio community in scientific investigations.

Objectives:

1. **Advance** scientific research and understanding through amateur radio activities.
2. **Encourage** the development of new technologies to support this research.
3. **Provide** educational opportunities for the amateur radio community and the general public.

Where are we now?

- **Main Google group now has over 1300 members!**
- **Continue science analysis using existing HamSCI datasets and instrumentation.**
  - Solar Eclipse Analysis
  - Equatorial Plasma Bubbles
  - Traveling Ionospheric Disturbances
  - Solar Flare Response
- **Build-out of Personal Space Weather Station Network**
  (New NSF DASI2 Grant)
- **Making the PSWS more usable for Ham Radio Operations**
  (New Frankford Radio Club Grant)

Where are we now?

- **Development of responsive HamSCI Campaigns for Responsive to Space WX events**
  (New NASA H-CSI Grant)
- **Deployment of HamSCI PSWS-compatible receiver systems to Antarctica**
  (NSF OPP Grant)
- **Development of Meteor Scatter QSO Party**
- **Working with the Lackawanna Blind Association / Handihams**
- **And so much more!**

HamSCI Newsletter!

- Introduced Fall 2024
- Now on second issue!
- Led by Ed Efchak (HamSCI PIO) and Dr. Mary Lou West
- Contributors from across the HamSCI Community
- https://hamsci.org/newsletter

THE UNIVERSITY OF SCRANTON
A JESUIT UNIVERSITY

HamSCI NEWSLETTER

VOL. 1 NO. 2 | SPRING 2025

Learn More About the
HamSCI Personal Space Weather Station

Grape WSPR R0388

HamSCI encourages you to get involved in our Personal Space Weather project. HamSCI utilizes multiple different types of measurement tools, including:

GRAPE = **G**reat **R**adio **A**mateur **P**ropagation **E**xperiment, GPS disciplined frequency measurements of standard time signal stations, such as WWV, WWVH and CHU.

WSPR = **W**eak **S**ignal **P**ropagation **R**eporter, a method of transmitting and receiving digital signals, uniquely suited to the study of radio wave propagation. Software can be downloaded at (**wsjt.sourceforge.io**).

To learn more about our Personal Space Weather Station, please visit the HamSCI web page.

THE UNIVERSITY of SCRANTON
W3USR
AMATEUR RADIO

hamsci.org

Welcome To the Q1 2025 Edition of the
HamSCI NEWSLETTER!

VY 73 de Nathaniel W2NAF

NASA's Heliophysics Big Year, which took place from October 14, 2023, to December 24, 2024, and included HamSCI's Festivals of Eclipse Ionospheric Science, is the perfect launching point into our own HamSCI's Big Year in 2025. The solar eclipses may now be behind us, but HamSCI's work is as exciting as ever!

These eclipses gave us the impetus to launch our Personal Space Weather Station network and show that we could successfully engage the global amateur radio community in coordinated, large-scale experiments to study the ionosphere and radio propagation.

We now have a treasure trove of observations currently being analyzed by our HamSCI members, and new ideas to carry us through to future studies of space weather and radio science. During this HamSCI's Big Year, we will see continued expansion of the Personal Space Weather Station network and the development of new experimental campaigns.

Already this year, Dr. Michael Hartje DK5HH brought a new PSWS WSPRDaemon receiver online at the German Neumayer Antarctic station, and McKenzie Denton KO4GLN is making excellent headway planning a new HamSCI Meteor Scatter QSO Party.

HamSCI members from around the globe will gather in March at the New Jersey Institute of Technology in Newark, New Jersey, for the 8th annual HamSCI Workshop. In April, HamSCI will team up with the ARRL and SciStarter to celebrate World Amateur Radio Day and Citizen Science month, helping to generate One Million Acts of Science and promote awareness of amateur radio.

This issue of the HamSCI newsletter features these activities and many of the people who make HamSCI work.

I hope you can join us in celebrating HamSCI's Big Year!

— Dr. Nathaniel Frissell, Ph.D.

nathaniel.frissell@scranton.edu

Hamvention Award Winners!

Dr. Kristina Collins KD8OXT
2025 Technical Achievement Award

Neil Rapp WB9VPG
2025 Amateur of the Year